

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (currently amended) A method for cleaning a liquid ejector including a liquid ejection head for ejecting liquid from a nozzle, the method including comprising:

sealing the liquid ejection head with a cap means device; and

generating negative pressure with a gear pump connected to the cap means device, and discharging fluid from the liquid ejection head with the negative pressure, the method being characterized by:

suctioning fluid from the cap means device with the gear pump so that a suction amount of the fluid per unit time becomes equal to a first suction amount in order to discharge fluid from the nozzle; and

continuously following said suctioning, suctioning fluid from the cap means device by changing the suction amount of the fluid per unit time from the first suction amount to a smaller second suction amount.

2. (currently amended) A liquid ejector comprising:

a liquid ejection head including a nozzle for ejecting a liquid;

a cap means device for sealing the liquid ejection head;

a gear pump, connected to the cap means device, for generating negative pressure and discharging fluid out of the liquid ejection head with the negative pressure in a state in which the cap means device seals the liquid ejection head, wherein the liquid ejector being characterized in that the liquid ejector:

suctions fluid from the cap means device with the gear pump so that a suction amount of the fluid per unit time becomes equal to a first suction amount in order to discharge fluid from the nozzle; and

continuously afterwards, suctions fluid from the cap ~~means~~ device by changing the suction amount of the fluid per unit time from the first suction amount to a smaller second suction amount.

3. (previously presented) The liquid ejector according to claim 2, wherein the gear pump is driven so that the suction amount per unit time becomes equal to the first suction amount in order to discharge fluid from the nozzle, and continuously afterwards, is driven so that the suction amount per unit time becomes equal to the second suction amount per unit time, and then stops.

4. (currently amended) The liquid ejector according to claim 2, wherein the gear pump is driven at a first rotation speed so that the fluid in the cap ~~means~~ device is suctioned in the first suction amount, and continuously afterwards, driven at a second rotation speed, which is lower than the first rotation speed, so that the fluid in the cap ~~means~~ device is suctioned in the second suction amount.

5. (currently amended) The liquid ejector according to ~~any one of~~ claim[[s]] 2 to 4, wherein the gear pump includes a housing and two gears accommodated in the housing.

6. (currently amended) The liquid ejector according to ~~any one of~~ claim[[s]] 2 to 5, further comprising:

a ~~detecting means~~ detector for detecting an increase and decrease in load of the gear pump caused by a flow of fluid into the gear pump and a flow of fluid out of the gear pump;

wherein the gear pump changes the suction amount per unit time from the first suction amount to the second suction amount after the ~~detecting means~~ detector detects an increase in the load of the gear pump.

7. (currently amended) The liquid ejector according to ~~any one of~~ claim[[s]] 2 to 6, further comprising:

a flow passage for guiding liquid to the nozzle; and

a valve device arranged upstream from the nozzle in the flow passage;

wherein the valve device includes a pressure chamber, for storing liquid, and a flexible member, displaced in accordance with a pressure difference between an interior and exterior of the pressure chamber, and the valve device opens and closes based on the displacement of the flexible member.

8. (currently amended) A method for cleaning a liquid ejector including a liquid ejection head for ejecting liquid from a nozzle, the method comprising:

sealing the liquid ejection head with a cap ~~means~~ device;

generating negative pressure with a gear pump connected to the cap ~~means~~ device and suctioning fluid from the cap ~~means~~ device in a first suction amount per unit time with the negative pressure;

determining whether or not fluid has been discharged from the nozzle; and

changing the suction amount per unit time from the first suction amount to a smaller second suction amount when determining that fluid has been discharged from the nozzle.

9. (new) The liquid ejector according to claim 3, wherein the gear pump includes a housing and two gears accommodated in the housing.

10. (new) The liquid ejector according to claim 4, wherein the gear pump includes a housing and two gears accommodated in the housing.

11. (new) The liquid ejector according to claim 3, further comprising:

a detector for detecting an increase and decrease in load of the gear pump caused by a flow of fluid into the gear pump and a flow of fluid out of the gear pump;

wherein the gear pump changes the suction amount per unit time from the first suction amount to the second suction amount after the detector detects an increase in the load of the gear pump.

12. (new) The liquid ejector according to claim 4, further comprising:
a detector for detecting an increase and decrease in load of the gear pump caused by a flow of fluid into the gear pump and a flow of fluid out of the gear pump;
wherein the gear pump changes the suction amount per unit time from the first suction amount to the second suction amount after the detector detects an increase in the load of the gear pump.
13. (new) The liquid ejector according to claim 5, further comprising:
a detector for detecting an increase and decrease in load of the gear pump caused by a flow of fluid into the gear pump and a flow of fluid out of the gear pump;
wherein the gear pump changes the suction amount per unit time from the first suction amount to the second suction amount after the detector detects an increase in the load of the gear pump.
14. (new) The liquid ejector according to claim 3, further comprising:
a flow passage for guiding liquid to the nozzle; and
a valve device arranged upstream from the nozzle in the flow passage;
wherein the valve device includes a pressure chamber, for storing liquid, and a flexible member, displaced in accordance with a pressure difference between an interior and exterior of the pressure chamber, and the valve device opens and closes based on the displacement of the flexible member.
15. (new) The liquid ejector according to claim 4, further comprising:
a flow passage for guiding liquid to the nozzle; and
a valve device arranged upstream from the nozzle in the flow passage;
wherein the valve device includes a pressure chamber, for storing liquid, and a flexible member, displaced in accordance with a pressure difference between an interior and exterior of

the pressure chamber, and the valve device opens and closes based on the displacement of the flexible member.

16. (new) The liquid ejector according to claim 5, further comprising:

a flow passage for guiding liquid to the nozzle; and

a valve device arranged upstream from the nozzle in the flow passage;

wherein the valve device includes a pressure chamber, for storing liquid, and a flexible member, displaced in accordance with a pressure difference between an interior and exterior of the pressure chamber, and the valve device opens and closes based on the displacement of the flexible member.

17. (new) The liquid ejector according to claim 6, further comprising:

a flow passage for guiding liquid to the nozzle; and

a valve device arranged upstream from the nozzle in the flow passage;

wherein the valve device includes a pressure chamber, for storing liquid, and a flexible member, displaced in accordance with a pressure difference between an interior and exterior of the pressure chamber, and the valve device opens and closes based on the displacement of the flexible member.

18. (new) The liquid ejector according to claim 9, further comprising:

a detector for detecting an increase and decrease in load of the gear pump caused by a flow of fluid into the gear pump and a flow of fluid out of the gear pump;

wherein the gear pump changes the suction amount per unit time from the first suction amount to the second suction amount after the detector detects an increase in the load of the gear pump.

19. (new) The liquid ejector according to claim 10, further comprising:

a detector for detecting an increase and decrease in load of the gear pump caused by a flow of fluid into the gear pump and a flow of fluid out of the gear pump;

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wherein the gear pump changes the suction amount per unit time from the first suction amount to the second suction amount after the detector detects an increase in the load of the gear pump.

20. (new) The liquid ejector according to 9, further comprising:

a flow passage for guiding liquid to the nozzle; and

a valve device arranged upstream from the nozzle in the flow passage;

wherein the valve device includes a pressure chamber, for storing liquid, and a flexible member, displaced in accordance with a pressure difference between an interior and exterior of the pressure chamber, and the valve device opens and closes based on the displacement of the flexible member.